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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/086,043	02/28/2002	S. Mark Haugland	H052722.0029US0	8887

32656 7590 03/16/2007

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EXAMINER	
ORTIZ RODRIGUEZ, CARLOS R	
ART UNIT	**PAPER NUMBER**
2125	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/16/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/086,043	HAUGLAND, S. MARK	
	Examiner	Art Unit	
	Carlos Ortiz-Rodriguez	2125	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 December 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *30-76* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *30-76* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Claims 1-29 are cancelled.

2. Ministerial amendments to Paragraphs 11, 26 and 156 to correct typographic or grammatical errors are entered.

3. Although the applicant states that new claims 30-76 are fully supported by the specification and FIGURES as originally filed, no support could be found for claims 62, 63, 65 and 66-76

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 62, 63, 65 and 66-76 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Although the applicant states that new claims 30-76 are fully supported by the specification and FIGURES as originally filed, no support could be found for claims 62, 63, 65 and 66-76.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. The terms "substantially equal", "substantially insensitive", "relatively sensitive" and "relatively insensitive" " in claims 30-76 are relative terms which renders the claim indefinite. The specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 30-76 are rejected under 35 U.S.C. 102 (b) as being anticipated by Clark et al. U.S. Patent No. 4,968,940.

Regarding claims 30, 44, 45, 54, 62, 63, 65, 66, 71, 72 and 73, Clark et al. discloses estimating (i) at least one of first and second electrical parameters and (ii) a spatial coordinate of a boundary separating first and second regions in a heterogeneous subterranean formation, the method comprising:

(a) obtaining a plurality of measured electrical signals that have penetrated the heterogeneous subterranean formation, the electrical signals representative of properties of the subterranean formation (C6 L54-68);

(b) comparing said measured electrical signals to a model that estimates said measured electrical signals as a function of the first electrical parameter, the second electrical parameter, and the spatial coordinate (C12 L9-57); and

(c) assigning a value to the first electrical parameter and the spatial coordinate such that the model generates estimated electrical signals that are substantially equal to the measured electrical signals, wherein said assigned value for the first electrical parameter is substantially insensitive to the second electrical parameter (C12 L23-27).

Regarding claim 31, Clark et al. discloses wherein (c) further comprises assigning a value to the second electrical parameter (C12 L23-27).

Regarding claim 32, Clark et al. discloses (d) transforming the second electrical parameter into a variable that depends on the first electrical parameter (Equation (5c)).

Regarding claims 33, 46 56 and 68, Clark et al. discloses the first electrical parameter comprises a resistivity and the second electrical parameter comprises a dielectric constant (C12 L60-65 and C13 L1-55).

Regarding claim 34, Clark et al. discloses the second electrical parameter comprises a resistivity and the first electrical parameter comprises a dielectric constant (C13 L33-68 and C14 L1-20).

Regarding claims 35, 47, 57, 69 and 70, Clark et al. discloses the measured electrical signals include an attenuation measurement and a phase shift measurement (C6 L42-53).

Regarding claims 36 and 48, Clark et al. discloses wherein: the model is a transformation that maps the first and second electrical parameters and the spatial coordinate to a vector representative of the measured electrical signals (C12 L9-57); and (c) further comprises applying an inverse of the transformation to the measured electrical signals (C10 L67-68).

Regarding claims 37, 49 and 61, Clark et al. discloses wherein (c) further comprises applying a first mathematical transformation to the measured electrical signals and a second mathematical transformation to the estimated electrical signals generated by the model (C12 L18-44).

Regarding claims 38, Clark et al. discloses wherein the first mathematical transformation yields a result that is relatively sensitive to the first electrical parameter and relatively insensitive to the second electrical parameter (C12 L39-51).

Regarding claims 39, Clark et al. discloses wherein the second mathematical transformation yields a result that is relatively sensitive to the first electrical parameter and relatively insensitive to the second electrical parameter (C12 L39-51).

Regarding claims 40, 50, 58 and 75, Clark et al. discloses (c) further comprises assigning values to the first electrical parameter in each of the first and second regions (C11 L45-51).

Regarding claims 41, 51, 59 and 76, Clark et al. discloses wherein the first region comprises an invaded zone, the second region comprises essentially virgin formation, and the spatial coordinate comprises a radius of the invaded zone (C19 L40-64).

Regarding claims 42, 52, 60 and 74, Clark et al. discloses wherein (a) further comprises obtaining the plurality of measured electrical signals at each of a plurality of frequencies (C15 L45-47).

Regarding claims 43and 53, Clark et al. discloses wherein (c) further comprises assigning distinct values to the first electrical parameter at each of the plurality of frequencies (C15 L45-47).

Regarding claim 55, Clark et al. discloses estimating (i) at least one of first and second electrical parameters and (ii) a spatial coordinate of a boundary separating first and second regions in a heterogeneous subterranean formation, the method comprising:

(a) obtaining a plurality of measured electrical signals that have penetrated the subterranean formation, the electrical signals representative of properties of the subterranean formation (C6 L54-58);

(b) evaluating a model to obtain estimated electrical signals as a function of the first electrical parameter and the spatial coordinate (C12 L9-57);

(c) applying a first mathematical transformation to the measured electrical signals to obtain a first result, the first result being relatively sensitive to the first electrical parameter and relatively insensitive to the second electrical parameter;

(d) applying a second mathematical transformation to the estimated electrical signals to obtain a second result, the second result being relatively sensitive to the first electrical parameter and relatively insensitive to the second electrical parameter (C12 L18-51) ; and

(e) assigning values to the first electrical parameter and the spatial coordinate such that the first result obtained in (c) and the second result obtained in (d) are substantially equal (C12 L23-27).

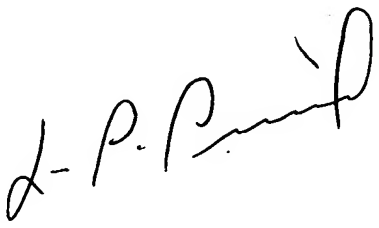
Regarding claims 64 and 67 Clark et al. discloses the first mathematical transformation is substantially identical to the second mathematical transformation (C10 L67-68 and C12 L18-44).

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carlos Ortiz-Rodriguez whose telephone number is 571-272-3677.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard can be reached on 571-272-3749. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Carlos Ortiz-Rodriguez
Patent Examiner
Art Unit 2125

March 12, 2007

LEO PICARD
SUPERVISORY PATENT EXAMINER
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